

Notice of Allowability

Application No.

09/817,869

Examiner

Ashwin Mehta

Applicant(s)

WANG ET AL.

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1638

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to papers submitted 2 December 2003.
2. ☒ The allowed claim(s) is/are 14-17, 19, 20, 22-30, 32, 33, 35-43, 45, 46 and 48-53.
3. ☒ The drawings filed on 26 March 2001 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>2172004</u> . |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

Drawings

1. The amendment to the specification, inserting a paragraph in the brief description of the drawings addressing the color drawings, has been entered. The petition for filing color drawings, filed March 26, 2001, has been approved.
2. The rejections of claims 1-53, 57, and 58 under 35 U.S.C. 112, 2nd paragraph, are withdrawn, in light of the claim amendments, cancellations, or upon further consideration.
3. The rejection of claims 1-26, 28-34, and 40-59 under 35 U.S.C. 112, 1st paragraph is withdrawn, in light of the claim amendments.
4. The rejection of claims 1-59 under 35 U.S.C. 112, 1st paragraph is withdrawn, in light of the claim amendments and cancellations.
5. The rejection of claim 54 under 35 U.S.C. 102(b) is withdrawn, in light of its cancellation.
6. The rejection of claims 54-59 under 35 U.S.C. 102(b) is withdrawn, in light of their cancellation.
7. The rejection of claims 1-59 under 35 U.S.C. 103(a) is withdrawn, in light of the claim amendments and cancellations.

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Examiner's Amendment

8. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Tracey Truitt on February 17, 2004.

The application has been amended as follows:

In the claims:

Claims 1-7 and 9-13 have been cancelled.

14. A method of growing a transformed plant in a location having unsuitable water and growth conditions for said plant's growth prior to transformation, said method comprising the steps of:

recombinantly altering the genome of said plant [in an effort] to change the level of PLD- α expressed by said plant, wherein the genome is altered by introducing a PLD- α coding sequence in antisense orientation to decrease the level of PLD- α in the plant, or by introducing a PLD- α coding sequence in sense orientation to increase the level of PLD- α in the plant;

testing water consumption levels of said plant in order to determine if said genome alteration will permit plant growth in said location; and planting the progeny of said plant in said location.

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15. The method of claim 14, wherein the PLD- α coding sequence is introduced in antisense orientation and PLD- α levels are decreased in said plant [said recombinantly altering step including the step of introducing an antisense gene of PLD- α into said genome].

16. The method of claim 14, wherein PLD- α coding sequences are introduced in sense orientation and PLD- α levels are increased in said plant [said recombinantly altering step including the step of introducing an insert into the plant genome, said insert comprising a promoter and at least one PLD- α coding sequence].

17. The method of claim 15, said PLD- α coding sequence in antisense orientation [antisense gene] having the sequence of SEQ ID No. 1.

19. The method of claim 16, wherein said PLD- α coding sequences are operably linked to the CaMV 35S promoter [comprising the 35S promoter from the cauliflower mosaic virus].

27. A method of growing a transformed plant having modified stomatal closure responses to water availability, which plant in its untransformed state exhibits a first stomatal closure response, said method comprising the steps of:

recombinantly altering the genome of said plant [in an effort] to change said first level of stomatal closure response, said altering resulting in a modified level of PLD- α expression, wherein the genome is altered by introducing a PLD- α coding sequence in antisense orientation

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to decrease the level of PLD- α in the plant, or by introducing a PLD- α coding sequence in sense orientation to increase the level of PLD- α in the plant; and

testing said stomatal closure responses of said transformed plant to determine if said plant has modified stomatal closure responses.

28. The method of claim 27, wherein the PLD- α coding sequence is introduced in antisense orientation and PLD- α levels are decreased in said plant [said recombinantly altering step including the step of introducing an antisense gene of PLD- α into said genome].

29. The method of claim 27, wherein PLD- α coding sequences are introduced in sense orientation and PLD- α levels are increased in said plant [said recombinantly altering step including the step of introducing an insert into the plant genome, said insert comprising a promoter and at least one PLD- α coding sequence].

30. The method of claim 28, said PLD- α coding sequence in antisense orientation [antisense gene] having the sequence of SEQ ID No. 1.

32. The method of claim 29, wherein said PLD- α coding sequences are operably linked to the CaMV 35S promoter [comprising the 35S promoter from the cauliflower mosaic virus].

40. A method of altering water consumption by a plant comprising the step of manipulating the level of PLD- α enzyme expression and thereby altering water consumption, wherein the

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level of PLD- α enzyme expression level is manipulated by introducing a PLD- α coding sequence into the plant in antisense orientation to decrease the level of PLD- α in the plant, or by introducing a PLD- α coding sequence in sense orientation into the plant to increase the level of PLD- α in the plant.

41. The method of claim 40, wherein the PLD- α coding sequence is introduced in antisense orientation and PLD- α levels are decreased in said plant [said manipulating step including the step of introducing an antisense gene of PLD- α into said genome].

42. The method of claim 40, wherein PLD- α coding sequences are introduced in sense orientation and PLD- α levels are increased in said plant [said manipulating step including the step of introducing an insert into the plant genome, said insert comprising a promoter and at least one PLD- α coding sequence].

43. The method of claim 42, said PLD- α coding sequence in antisense orientation [antisense gene] having the [a] sequence of SEQ ID No. 1.

45. The method of claim 42, wherein said PLD- α coding sequences are operably linked to the CaMV 35S promoter [comprising the 35S promoter from the cauliflower mosaic virus].

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9. Claims 14-17, 19, 20, 22-30, 32, 33, 35-43, 45, 46, and 48-53 are allowed.

10. The following is an examiner's statement of reasons for allowance: Applicants have developed methods to grow a transformed plant in locations having water conditions that would otherwise be unsuitable for a corresponding non-transformed plant to grow; methods to modify stomatal closure responses to water availability in transformed plants; and methods to alter water consumption in a transgenic plant. The methods comprise either increasing or decreasing the level of PLD- α expression in the transgenic plants by introducing either a PLD- α coding sequence in sense orientation or antisense orientation, respectively. The methods also comprise testing water consumption levels, transpiration rate, diffusion resistance, exposure to abscisic acid, turgidity, and stomatal closure response. The prior art teaches transgenic plants into which nucleotide sequences comprising the Arabidopsis PLD- α coding sequence in antisense orientation was introduced, and transgenic plants into which nucleotide sequences comprising the castor bean PLD- α coding sequence in sense orientation was introduced (Fan et al., Plant Cell, 1997, Vol. 9, pages 2183-2196; Wang et al., Characterization of Phospholipase D-Overexpressed and Suppressed Transgenic Tobacco and Arabidopsis, In Physiology, Biochemistry, and Molecular Biology of Plant Lipids, 1997, Kluwer Academic Publishers, William, J.P., Khan, M.U., and Lem, N.W., Eds., pages 345-347). However, the prior art does not teach the testing of the water consumption or of changes in stomatal closure responses to water availability in the transgenic plants. The prior art does not teach or fairly suggest expressing PLD- α coding sequences in sense or antisense orientation in transgenic plants to

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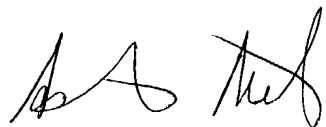
allow the plants to grow in locations that have otherwise unsuitable water and growth conditions that would not support growth of the plant.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

Any inquiry concerning this or earlier communications from the examiner should be directed to Ashwin Mehta, whose telephone number is 571-272-0803. The examiner can normally be reached on Mondays-Thursdays and alternate Fridays from 8:00 A.M to 5:30 P.M. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amy Nelson, can be reached at 571-272-0804. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3014 and 703-872-9306 for regular communications and 703-872-9307 for After Final communications. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1600.

February 18, 2004


Ashwin D. Mehta, Ph.D.
Primary Examiner
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